

## PROJECT BACKGROUND

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### Area Prehistory

Man has inhabited the Middle Atlantic coast and the northern New Castle County area for a period in excess of 12,000 years. During that extensive time span numerous cultural systems have developed and have been modified. Cultural systems existing in the earliest periods were altered to adapt to social and natural environments then existing only to again be modified when that environment changed. This system of cultural adaptation created a culture history composed of a succession of distinctive adaptive phases.

The archaeological literature refers to these adaptive phases as cultural traditions, stages, periods, etc. The earliest recognized phase which existed in the Middle Atlantic area is referred to as the Paleo-Indian tradition or stage. This adaptive phase is modeled as small bands of hunters/gatherers who roamed over wide territories in search of natural resources which existed in the late Pleistocene and early Holocene environment in which they lived. Later Paleo-Indian groups, and succeeding peoples known generally as Archaic peoples, appear to have adapted to an economy which stressed the exploitation of resources within a much more restricted territorial base. Seasonality and a restricted wandering settlement system appears to characterize this phase of adaptation. The last of three major adaptive traditions recognized in Middle Atlantic archaeology consists of a series of cultural phases each more successfully adapted to a mixed economy which seems to have stressed both food gathering of a specialized form as well as limited food production (horticulture).

This very brief resume of current archaeological concepts of environmental adaptations in the Middle Atlantic area will be elaborated upon as it pertains to the cultural resources of the Delaware Park Site. Only those adaptive phases which have been recognized as major influences on the occupants of the site will be further discussed. Thus, no further concern will be taken with the earliest adaptive traditions - the Paleo-Indian and the earliest of the Archaic - since their presence at the site is either undocumented or quite superficial.

Piedmont Tradition - During the last few thousand years of the generalized Archaic adaptive pattern, restricted areas within the eastern United States witnessed the development of specialized, and somewhat distinctive, traditions composed of similar technology and resource procurement procedures. The Piedmont Physiographic Province, from New York through Virginia and into North Carolina witnessed a similar techno-economic manifestation which can be referred to as the Piedmont Tradition (Kinsey 1972). The Piedmont Tradition is recognized throughout the entire Middle Atlantic area through the

distinctive projectile point styles associated with the tradition. Very little is known in depth about the economy but general trends can be recognized. The Piedmont Tradition is marked by the presence of narrow-bladed and stemmed projectile points made usually of locally available jaspers and flints or, when readily available, of quartzes and quartzites. Other lithic tool types found in association with these point styles include grooved axes, pecked grinding and anvil stones, and a variety of flaked stone knives, scrapers, choppers, etc.

The Piedmont Tradition has been recognized in northern Delaware (Thomas 1976). Small occupation sites containing limited numbers of projectile points and associated artifact types have been found throughout the Delaware Piedmont and the adjacent coastal plain. These sites are usually found on slight knolls overlooking lower-lying wetland forests or marshes (swamps). Certain sites, such as the Clyde Farm, which lies less than one half of a mile south of the Delaware Park Site along the White Clay Creek and Churchmans Marsh, contain evidence of a succession of small encampments on the same or adjacent loci. Based on the existing evidence it can be suggested that the Piedmont Tradition, as it is expressed in northern Delaware, consisted of a number of small social units adapted to a restricted wandering economy. This would probably have involved the occupancy of a series of loci, each of which at different times of the year would have been situated near a readily harvested food resource. Among the probable resources to be procured would have been deer and other hunted mammals, seasonally migrating wildfowl, spawning anadromous fish, seeds and berries, fruits and nuts, and possibly the shell fish of the fresh water streams.

The Piedmont Tradition appears to have lasted from about 3200 B.C. to 1700 B.C. (Kinsey 1976:339) in the Upper Delaware Valley, a time span which should be slightly longer in the northern Delaware area. Later Archaic traditions have been recognized in the Middle Atlantic area but do not appear to have manifested themselves at the Delaware Park Site.

Woodland Pattern - Although evidence of a minor occupation by later Archaic peoples of the Delaware Park Site has been found, the sparse nature of this occupation does not justify an elaborate discussion of this adaptive phase. Terminal Archaic, or Transitional Period, artifacts are represented by only a few Broad Spearpoints and possibly associated but unrecognized lithic tools. The Early Woodland Period is generally accepted in the Middle Atlantic area as representing a major environmental adaptation to a somewhat more settled lifestyle with a greater emphasis on the exploitation of tried and true natural resources and, possibly, the cultivation of a limited number and amount of plant food species. This adaptive phase is relatively well-studied due to its easily recognized artifact complex and the apparently more intensively occupied camp sites.

Ceramics, the most diagnostic of Early Woodland artifacts, are believed to have been introduced into the Middle Atlantic area slightly before the end of the second millenium, B.C. Most recognized types, however, when dated appear to cluster around 600 to 800 B.C. Several models or schemes have been introduced and can be summarized as follows.

The earliest ceramic type in the Middle Atlantic area appears to be a steatite-tempered ware known as Marcey Creek Soapstone Tempered. Marcey Creek ware is model, has a flat bottom and is heavily tempered with crushed pieces of steatite. Marcey Creek ware appears to have developed into a coiled and conoidal based ceramic referred to as Seldon Island. During a subsequent period of intense experimentation by potters (800 to 600 B.C.) ceramics were distributed throughout the Middle Atlantic and Northeast and the technology was expressed in a variety of forms. Early Woodland ceramic types recognized in the Delmarva Peninsula and, most likely existing in northern Delaware, include Dames Quarter Black-stone Tempered, Coulbourn Net and Cord Marked, Wolf's Neck wares and Accokeek Creek Cork-impressed.

Early Woodland is not only expressed as a ceramic type but can be referred to by its general adaptive phase. Sites of this period, in the general area of the Delaware Park Site, are those previously utilized by coastal plain Archaic peoples. No settlements of this type have been identified in the Delaware Piedmont. Further south in the Delmarva Peninsula are a number of sites of this type and based on this evidence it appeared likely that the Early Woodland was basically a riverine and marine oriented adaptation. Although it was recognized from Mid-Atlantic coast sites that the Early Woodland peoples did utilize upland resources, this was thought to be an insignificant part of the Early Woodland economic system (Kent, Smith & McCann 1971:195-201).

Recently, investigations in the immediate vicinity of the Delaware Park Site have added to the understanding of Early Woodland adaptive practices. Excavations conducted in 1973 at the Clyde Farm, only a short distance south of the project area, revealed the presence of relatively extensive Early Woodland activity. This find was reported by Thomas (1976) as follows:

"The most significant of the finds are several pieces of a pottery vessel of a type thought to have been the earliest true ceramic type in the northeastern part of North America. this flat-bottomed vessel is tempered with fragments of steatite..... Associated with the potsherds [in a subsurface feature] are seven ovate knife blades of a non-local quartzite. The context in which they are found suggests that the Clyde Farm has been used as a camp by people harvesting the fall nut crop of the area. Evidence also exists for hunting activities also conducted at the site during the period of the Clyde complex."

The current concept of the Early Woodland adaptive phase is one that suggests that the economic system practiced by these people was one which tended to emphasize certain abundant resources distinctive of particular environmental zones while utilizing to a lesser extent the wide variety of resources exploited during earlier Archaic adaptive phases. This is succinctly expressed by Kinsey (1974:16) in a discussion on Early/Middle Woodland settlement patterns when he states, "This may involve summer and fall flood plain occupation (fusion) and winter rockshelter [upland] occupancy (fission".

Middle Woodland adaptive practices are seen as a continuation of those recognized during the Early Woodland. In recent studies (Kinsey 1974 and Williams and Thomas 1980) the two manifestations are combined. In a summary of current New Jersey area conceptions of the Early/Middle Woodland, Williams and Thomas (1980:23) discuss a "land-based Subsistence Orientation" as "a significant factor in Early/Middle Woodland economies". Among the patterns recognized as being a part of that economic orientation in the State of New Jersey are the exploitation of deer and nuts as the primary land-based resources; the use of small, seasonal or transient campsites; and the practice of "scheduling". Site location was seen to be primarily dependent on proximity to exploitable resources.

The Late Woodland is seen, by most Middle Atlantic area archaeologists, as one in which a major subsistence-settlement adaption occurred. Late Woodland sites are seen as semi-permanent or permanent base camps oriented around the exploitation of only a few major food procurement practices, one of which involved the cultivation of plant foods. Previous investigations in the Piedmont and northern coastal plain areas of the Delmarva Peninsula have not revealed the location of major Late Woodland sites. The tidal areas of the Delmarva Peninsula, in contrast, contain numerous large sites of a semi-permanent base camp type (see Thomas et al 1975 & Thomas 1976).

The presence of Late Woodland peoples in New Castle County, Delaware is evidenced by the triangular projectile point types associated with their hunting activities. Ceramics of types that exist in great volume in the tidal water areas of the Delmarva Peninsula are rare in northern Delaware. Late Woodland ceramics of types associated with large village sites in the middle Delaware River valley have not been recognized in the area. Adjacent Cecil County, Maryland and Chester County, Pennsylvania appear to have been as sparsely occupied by Late Woodland base camps as was New Castle County. Adjacent New Jersey counties, however, do contain ample evidence of archaeological resources of Late Woodland occupation.

Contact Period - During the early phase of European colonization in the northern Delaware, Maryland and Pennsylvania areas, a considerable presence of aboriginal settlement can be documented. Large village sites, many of which have since been destroyed by modern cities, were visited and described by Dutch, Swedish and English explorers and settlers. Archaeological evidence of these settlements, however, is just as scarce as is evidence of Late Woodland settlements. Notable among the recent archaeological work on Contact Period aboriginal culture is that of Dr. Marshall Becker of West Chester State College. Dr. Becker's ethnohistorical research and archaeological investigations have established a detailed sequence of occupation within the Brandywine River drainage of Delaware and Pennsylvania. White Clay Creek documented aboriginal occupation, however, is limited to a single major Leni Lenape village that was located just above the current Delaware-Pennsylvania line. Some documents refer to early settlers spotting transient aboriginals in the lower reaches of the White Clay Creek and the Christina River (Bread and Cheese Island).

## Research Design

The following section summarizes the Research Design submitted by Mid-Atlantic Archaeological Research, Inc. prior to the initiation of field investigations. Appendix A consists of the entire Research Design. This brief summary is intended to familiarize readers with the highlights of that document.

The Research Design was based upon preliminary investigations conducted as a Reconnaissance Survey and a subsequent Intensive Survey as well as on a predictive subsistence-settlement model and knowledge of previous investigations at nearby northern Delaware archaeological sites. Based on the earlier investigations of the Delaware Park Site, a set of Known Data Categories was established to assure that research objectives were within reason. Among these were the span of occupation of the site, the types of artifacts expected to be recovered, the existence of subsurface features and the presence of distributional data. More refined data categories include the existence of floral remains within subsurface features, the existence of charcoal for radio-carbon dating and the likelihood that features of relatively deep depths would be found.

Research problems proposed, together with testable implications, include the following: 1) the definition of cultural components and temporal sequences relating to both Piedmont and Coastal Plain aboriginal manifestations; 2) the definition of a subsistence activity conducted at the site which relates to riverine resource procurement during spring months; and 3) the utilization of the Delaware Park Site as a base camp for resource exploitation during the summer and fall months as well.

In order to operationalize the research investigations, a series of investigative tasks were defined. These included Task 1: Background Investigations; Task 2: Logistics; Task 3: Subsurface Exposure & Feature Identification; Task 4: Excavation of Features; Task 5: Data Processing; and Task 6: Report Preparation.

## Field Methodology

Control System - The purpose of the provenience control system designed for use during the Delaware Park Site field investigations was to provide for the exact recording of both vertical and horizontal provenience of all archaeological data. Adopted at the Delaware Park Site was a grid system with a permanent Datum Point located east of the excavation area and outside of any planned work. The Datum Point served as the 0-0 point on a north/south and east/west grid. The point selected was the same Datum Point used in the 1979 Intensive Survey. The Datum Point was marked by an aluminum pipe and was tied into the Del-DOT mapping system used for the construction of the Amtrak bridge.



PLATE III-1 VIEW OF SITE - EARLY STAGE

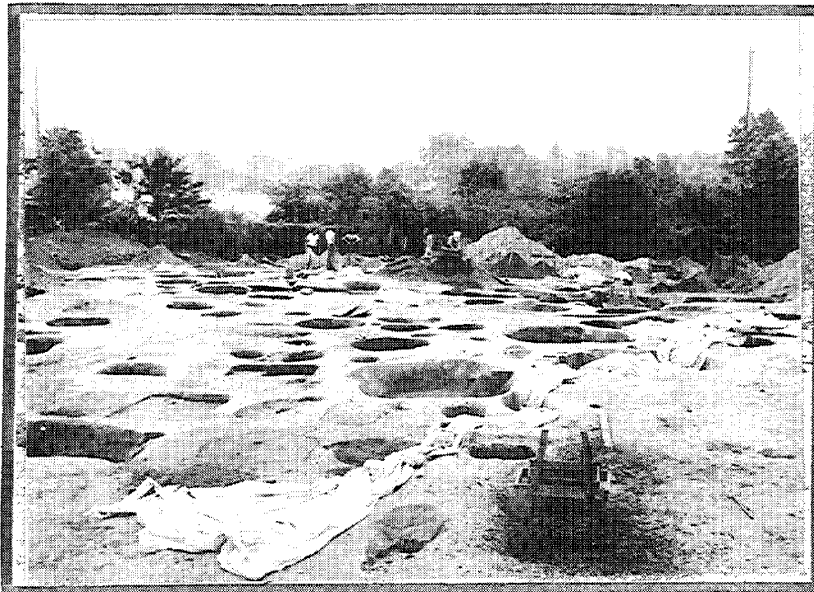


PLATE III-2 VIEW OF SITE - LATER STAGE

All grid lines were measured in metric units. Eighteen 10 meter Blocks were established and designated by the distance of the corner of the Block which was the furthest from the Datum Point. Thus, Block N20W20 is that block whose northwest corner measures 20 meters north and 20 meters west of the Datum Point. Each 10 meter Block was divided into 25 units, each measuring 2 meters on a side. Units were numbered 1 through 25 beginning in the upper left corner (northwest) of the Block and proceeding left to right within each Block. (see Appendix B for details of this system)

Features are individual aboriginal phenomenon which occur on the site in subsurface context. The features found were given numerical designations in the order in which they were found, regardless of their location in the site. The features identified in the 1979 testing retained the same number that was assigned at that time to provide continuity.

Catalog Numbers were considered as "bag lots" and were designated by the system utilized by the Bureau of Archaeology and Historic Preservation, State of Delaware. The accession number given to the site collection by the BAHP is 79/166. A third number was assigned in the field to refer to a specific Block and unit or feature. Additional numbers and letters were assigned to indicate strata or levels and sections when applicable. Thus, 79/166/121/N-3 refers to catalog number 121 (Feature 58), north section, level 3.

Datum for the vertical control system was established at 6.47 meters above sea level. Secondary datum points were established within each unit at the top of Level 1 (see Excavation Procedure, Step 4, for definition of level 1). Measurements within the units were recorded in terms of centimeters below the secondary datum points.

Excavation Procedure - The first step in preparing the site for excavation was to do a second controlled surface survey (the first having been done in 1979). Each surface find was numbered and the exact provenience recorded by transit survey. The second step was to remove the plow zone with a Gradeall. Approximately one quarter of the site was exposed at a time to insure maximum protection from erosion and human disturbance for the remainder of the site. A Gradeall with a flat-edged bucket was used by a careful operator while Data Recorders monitored at all times.

The third step was to survey in the grid in the manner described above in the section on the control system. The unit corners were marked with Mason Jar caps bearing the Block and unit numbers and secured in the ground with a six inch nail. Surveyor's flagging was used in conjunction with the Mason Jar caps to note the Block corners. The fourth step was to clean the newly exposed surface, which is referred to as Level 1, using flat shovels and trowels. All cleaned areas were kept clean by designating them as off-limits.

The final step in the preparation for subsurface excavations was to identify all visible features, record them on unit sheets and photograph the features as they appeared at level 1.



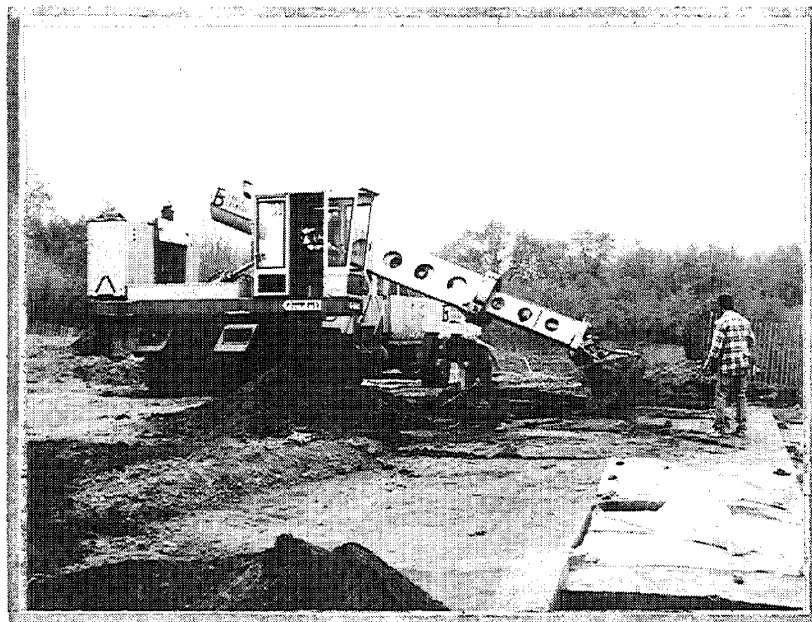


PLATE III-3      GRADALL IN USE



PLATE III-4      SHELTERS IN USE

In a portion of Block S10/W10 and N10/W10 level 1, 10 centimeters, was removed by trowel. This was done in order to determine if subsurface features which might not be visible at the interface of the top soil and the subsoil (level 1) would become visible at a deeper level. This procedure was reviewed and determined to be unproductive, and after consultation with Del-DOT personnel, was dropped from the excavation procedure. With the exception of two units used as strata cuts, no other units were excavated in this manner.

After a feature was prepared as described above, it was divided into north and south sections for excavation. The feature fill from the south section was removed first in 20 centimeter levels and screened through  $\frac{1}{4}$  inch mesh screen. After the south section was removed, the feature was again photographed and the profile drawn. The north section was removed in 20 centimeter levels except where natural or artificial strata were evident. In such cases the north section was excavated by these strata.

After all fill was removed, and the walls and floor accurately defined, the feature was drawn and photographed in it's final configuration. To assure that the bottom had been properly defined a small test hole was excavated through the bottom of many of the features. Artifacts found within the features were initially plotted three dimensionally, until this technique proved to be too time consuming. All soils for chemical, phytolith and pollen analysis and seed flotation was taken from the north section. Charcoal was taken from both the north and south sections to insure as large a sample as possible.

Soil samples for phytolith, pollen and chemical analysis were removed from the north profile in a vertical column from the top of the feature to the bottom. One pint of soil was taken every ten centimeters. In several features samples were taken from below the floor bottom to test for calcium and phosphorus percolation.

Soil for seed analysis was taken from various levels throughout the north section of the feature and bagged for transport to the laboratory where it was subjected to a flotation procedure. The total volume of each feature was recorded so that percentages of seeds per liter of feature fill could be determined necessary.

The site was protected from bad weather in two ways. First, the inactive areas which had been stripped of the plow zone were covered with plastic sheets. These remained in place until excavation was to start. Second, quonset type plastic shelters were used to protect active excavation areas from rain.

The objective of the Delaware Park Site excavations is detailed in the Research Proposal (see Appendix A). Although this research design was followed during the actual field investigations certain minor modifications were made throughout the field season.

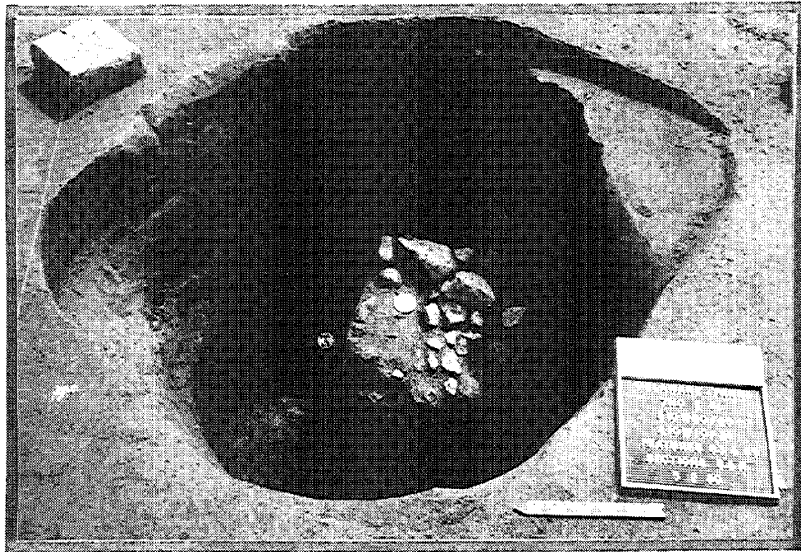


PLATE III-5 FEATURES 63 & 69

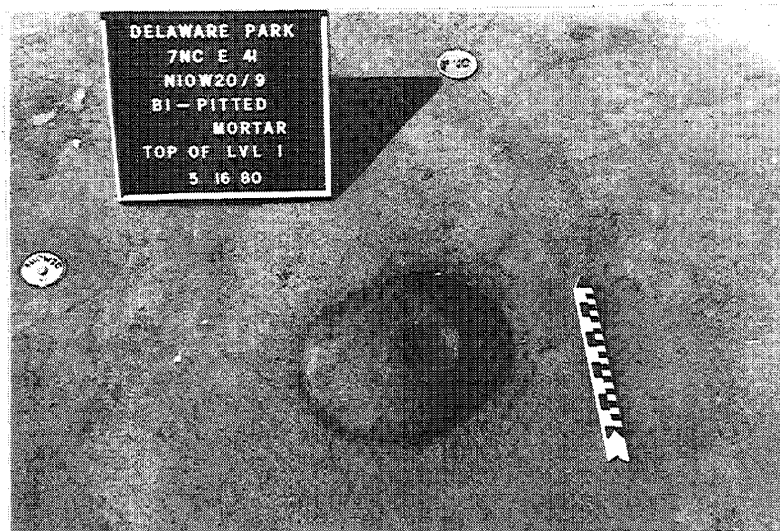


PLATE III-6

BI-PITTED MORTAR

### Laboratory Procedure

Four types of materials were brought into the laboratory for processing: lithic and ceramic artifacts; soil samples for flotation; soil samples for chemical, pollen, and phytolith analysis, and charcoal. To maintain continuity all types of material was given the same catalog number as the feature it came from.

The lithics and ceramics were washed and boxed for study. After washing, non-artifactual material was discarded and general inventories were compiled as preparation for detailed analysis. The ceramics were sorted into groups based on paste, temper type, and decoration. The lithic analysis was done by Mr. John H. Cresson using methods similar to those published by Errett Callahan (1973 & 1976) and Daniel Griffith and Richard Artusy (1977). Special attention was given to edge wear and edge angles, edge flaking and general morphology of the artifact.

All charcoal, seeds, chemical, pollen and phytolith samples were selected from the same features to provide complete information on a group of features. Control samples for chemical, pollen and phytolith analysis were also done from non-feature subsoil layers. The large soil samples were floated to remove seeds, fish scales, small bone fragments and charcoal from the soil.

The method used for the flotation of the Delaware Park Site soil was adapted by William Sandy to be the most efficient and productive for this project. The apparatus was simple and inexpensive (see Figure IV-1). A 55 gallon plastic drum with a drain plug was modified with the following fittings; a PVC water inlet pipe with a valve was put in near the bottom. This was attached to a series of perforated PVC pipes to create water circulation within the drum. A triangular wier was fitted at the top of the drum with a removable fabric bag to filter the light weight material (light fraction) out of the overflow. A hanging basket assembly was fastened inside the drum about 30 centimeters from the top to catch the heavy fraction. This assembly had a removable fiber glass screen to lift out the heavy fraction without removing the entire assembly. This type of apparatus allowed 8 liters of soil to be loaded at a time. Approximately 500 liters can be processed per day depending on the nature of the soil sampled.

After the soil was floated, the residue was picked through to separate floral and faunal material and micro-flakes from the pebble debris. Very little faunal remains or micro-flakes were found in the examined material. The floral remains were sent to the MASCA Laboratories at the University of Pennsylvania for identification and analysis. The results will be discussed later, and a detailed list of the seeds, their seasonality and possible uses can be found in Appendix E.

Charcoal samples for Carbon-14 dating were selected in two ways. The first set of samples was selected by their association with diagnostic lithic and ceramic artifacts. The second set was selected according to the morphological type of the feature from which it came. In both cases the quantity of charcoal available was the limiting factor. Because of this, only two Type E features were dateable. The selected samples were submitted to Geochron Laboratory at the University of Georgia for processing. A complete list of the Carbon-14 dates and the University of Georgia reference number is given in Appendix K. The application of the dates to the analysis of the Delaware Park Site data is discussed elsewhere in the text.

The analysis of soils for chemical residues, pollen and phytoliths was a major reason for the collection of soil samples from controlled profiles. The chemical analysis was done at the Soil Laboratory of the School of Agriculture, University of Delaware. This lab provided information on the quantity (parts per million) of phosphorus, potassium, magnesium and calcium, as well as providing a pH reading on all samples. Samples of 250 grams were sent out in bags provided by the Soil Laboratory. The samples were selected from various 10 centimeter levels throughout the site's features. The top 20 centimeters were never used (except in the case of extremely shallow features) because of chemical treatment of the soil for modern agricultural purposes. All samples included the bottom of the feature, and when available, samples from below the floor were analyzed to provide information on chemical percolation. The results of the chemical analysis as they apply to determining feature function are discussed elsewhere, and the quantitative results are presented in Appendix H.

Soil samples for phytolith studies were sent to Temple University for processing and analysis. These samples were selected from lower levels of the features to eliminate contamination from modern agriculture and the modern environment. The process used to isolate the phytoliths and the statistical results are presented in Appendix F. Their application to the paleoenvironment is discussed in the text.

Soil samples for pollen analysis were sent out in 250 gram samples to Robert Doyle Associates of Chesapeake City, Maryland. The pollen samples were taken from the same levels as the phytolith samples so corresponding information could be studied. The isolation process and the quantitative data are discussed in Appendix G.

# FLOTATION UNIT

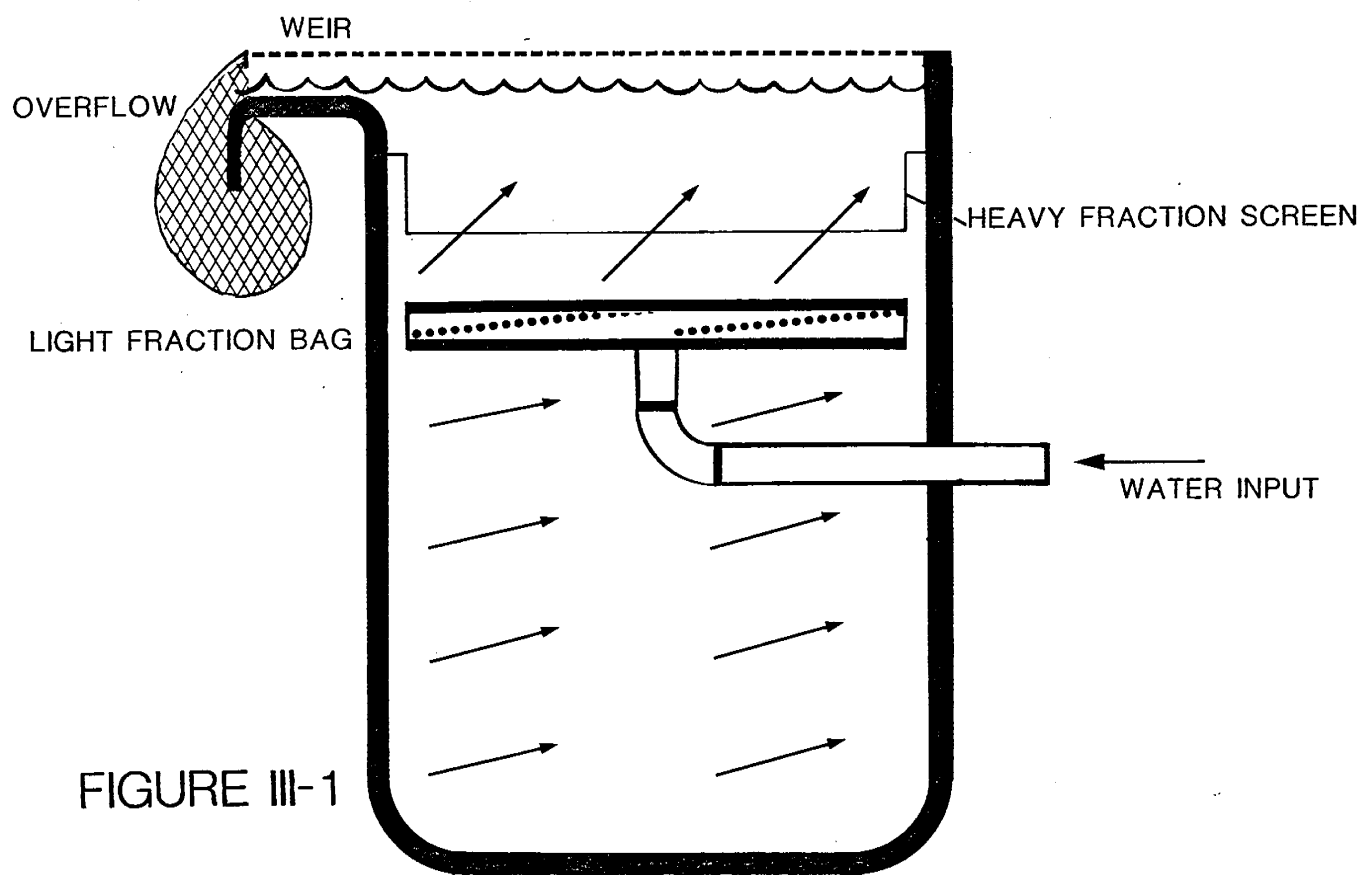
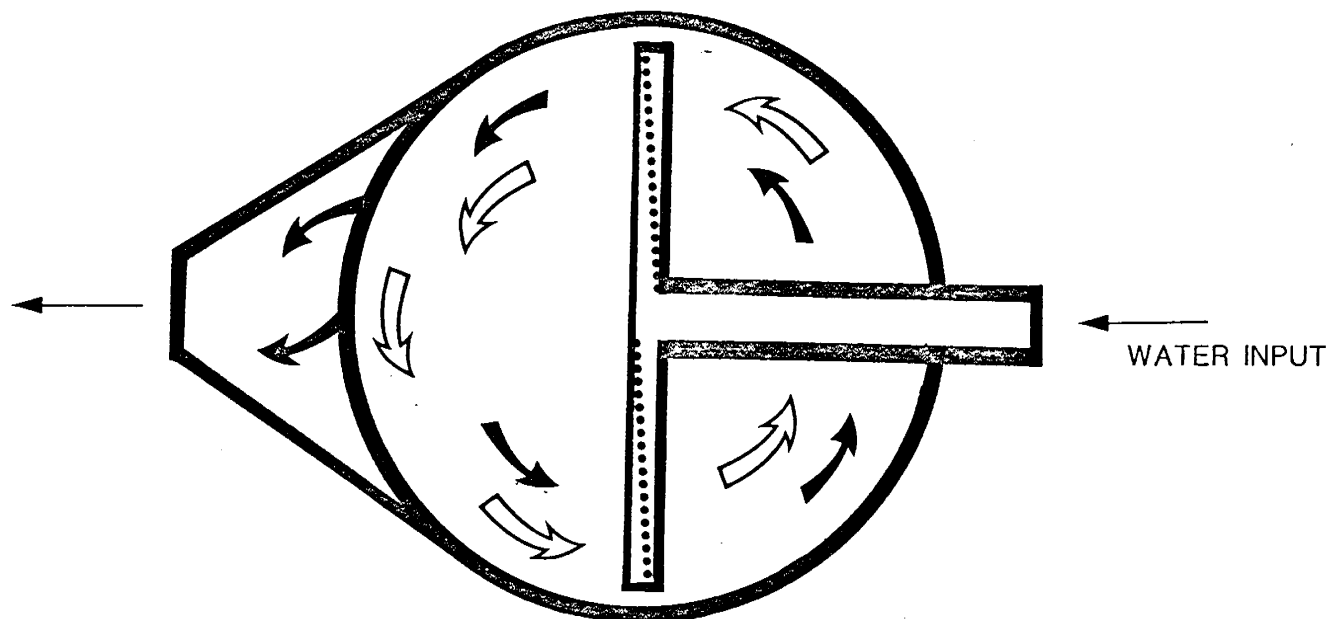


FIGURE III-1